

**PERCEPTION OF STRESS DURING PANDEMIC ACROSSVARIOUS PROFESSIONS: ARTIFICIAL INTELLIGENCE,AN EARLY DETECTOR FOR INTERVENTION**

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**ABSTRACT**

With the increasing awareness of the significance of mental health and psychological well-being during the COVID 19 pandemic, it is essential not to overpass signs of distress. AI used in everyday gadgets and apps enables individuals to watch their health in the absence of physical consultations with doctors and other medical experts and can facilitate them to call for support and required assistance much earlier.

**Keywords:** Artificial Intelligence, Medical aid, Mental Health, Self-tracking

**Introduction**

The COVID-19 crisis is a physical health crisis, but emerging research and surveys point out that it is also a mental health crisis for a better population. In concert with psychological health, physical health is critical to a society's well-being and overall functioning. The fall out of the pandemic-- deaths, isolation, unemployment, separation, ill-health have caused considerable distress to the populace.

"During an eruption of infectious disease, the population's psychological reactions play a critical role in shaping both the spread of the disease, occurrence of emotional illness, and social disorder during and after the eruption."

"As estimated by the World Health Organization (WHO), in November 2020, the pandemic has caused nearly 1.30 million deaths of 53.7 million confirmed cases and put people under tremendous psychological pressure." The cases soared so high that India soon overtook the United States of America in terms of case count, which at that point, held the dubious distinction of being the country with the highest number of COVID cases. Thus, to control the spread of COVID 19, the county opted for lockdown, forcing people to stay at home. Office, school, market places were all shut down. "Students lacked engagement with their schools and colleges,

resulting in isolation, social media addiction, and no physical activity, leading to psychological imbalance. "Reportedly, the general public and all sections of society are highly vulnerable to psychological health issues during an epidemic." "Common individual behavioral effects like anxiety, stress, depression, anger, and post- traumatic stress are socially functional disorders affecting people globally."

### **Materials And Methods**

For this study, a survey was done on randomly selected population categories--students, teachers, IT workers, homemakers, and retired adults. The questionnaire utilized for this purpose was based on the Perceived Stress Scale (PSS). The PSS is a classic stress assessment instrument. "Initially developed in 1983, the tool remains a popular choice for helping us understand how different situations affect our feelings and perceived stress."

As mentioned, the online questionnaire was based on the PSS's ten-item perceived stress scale to retrieve information on attitude towards stress caused by COVID19. The questions asked about the respondent's feelings and thoughts during the last month.

"Primary occupation data, stress prevalence, and attitude towards the stressful event were collected using a Google Form and circulated through the social media platform WhatsApp."

Shared the online questionnaire with 225 people in each selected category (mentioned above) and collected the responses for 30 days. After a month, 100 responses were received in each category.

### **Subject Screening**

#### **PSS Score Key**

Individual scores on the PSS can range from 0 to 40, with higher scores indicating higher perceived stress.

1. range of 0-13 indicates low stress.
2. range of 14-26 indicates moderate stress.
3. range of 27-40 indicates high stress.

### **Survey report**

The scores for the selected categories of respondents are as follows:

Teacher/Professors – 17

Homemakers – 21

IT-workers – 17

Students – 24

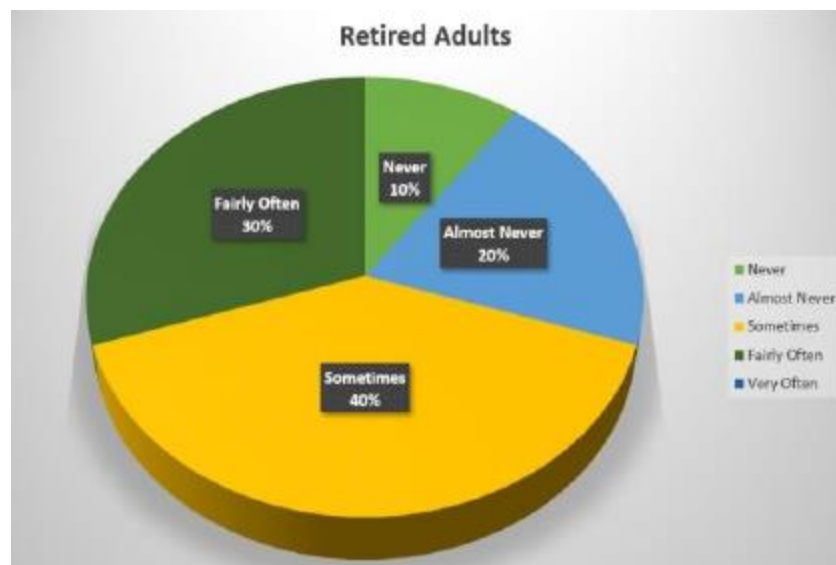
Retired Adults – 16

All the scores fall into the range of 14-26. i.e., moderate stress still has a significant presence in all the groups.

The findings show students and homemakers towards the high range of moderate stress.

Interesting is none of the subjects was aware of any stress they were facing. In Several communities, the stress level is often confused with fatigue or illness, or bad mood. Thus, it's essential to be aware of the natural changes evolving in the body during the day.

This requirement introduced Artificial intelligence in the field of psychology. Artificial intelligence helps track the body's physiological responses, thus bringing early detection to prevent any stress-related health trouble.



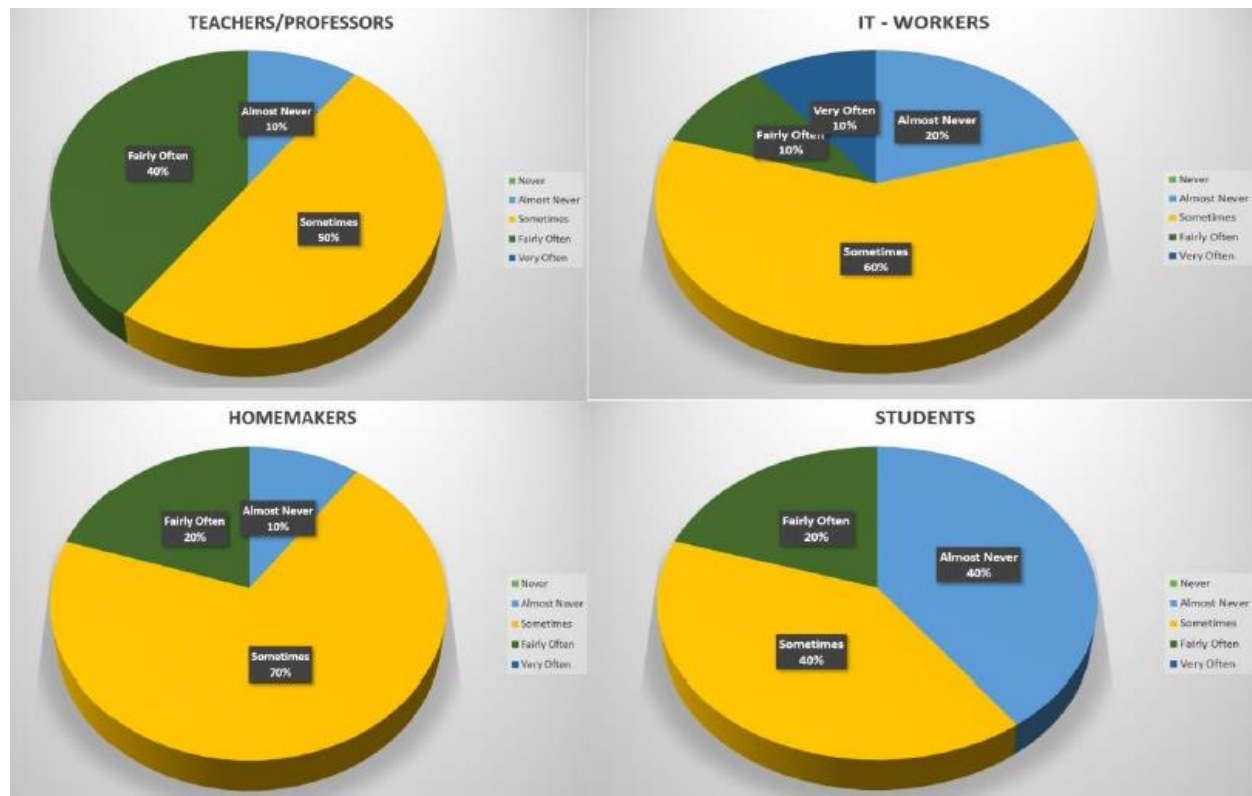


Figure 1: PSS result of retired adults, teachers, IT-worker, homemakers, students.

### Artificial Intelligence and Psychology

Psychology, when associated with artificial intelligence, produced a new discipline, Artificial Psychology. “Artificial psychology is a theoretical discipline proposed by Dan Cutas (1963) as a branch of psychology.”[18] Artificial psychology contains artificial mental processes necessary to line intellectual, autonomous, self-evolving, artificially cognitive systems and comprehend human emotions through amalgamating psychology, neuroscience, computer sciences.

The tide of its success has increased its acceptability and usage across the board. Machine learning algorithms can detect signs of anxiety and depression through the analysis of specific physiological signals. Heart activity, brain activity, muscle activity, electrodermal activity (EDA), blood volume pulse, skin temperature - physiological responses of an individual to a stressful event -- providing a preliminary detection and easier way of diagnosing difficult conditions spot and often go unnoticed. With the help of artificial intelligence, for instance, audio recording over a simple phone call helps with a person's diagnosis with more than 80% accuracy.

## **Discussion**

Researchers have discovered that perceived stress and physiological stress levels of an individual have a coherency between them. "They demonstrated that although physiological data is similar, stress levels could be different." "Moreover, perceived stress reports are collected in specific periods to miss the stress episodes in some cases." "People tend to forget stressful events significantly if the survey connection period extends, resulting in discrepancies between the measured physiological and perceived stress levels." "Recently, smartphones, smartwatches, and smart wristbands have become an integral part of our lives and have reached a widespread significant amount of effort has been made to develop these mechanical stress measuring systems, smart devices, and advanced AC algorithms. " The use of mobile apps, smartwatches, and artificial intelligence platforms allows people to enable such features on their devices to facilitate self-monitoring and early detection of mental stress, further early access to treatments from the comfort of their personal space.

## **Conclusion**

Stress is an important challenge in modern society, and it has social and economic effects."PSS includes several direct questions about the current level of experienced stress and perceived psychometric evidence regarding personality and social support." PSS is temporal, and its predictive validity may vary over time.

The latest studies show, Explainable Artificial Intelligence Models (XAI) enables the production of thorough models for an average individual while maintaining the accuracy of prediction and analysis. AI-based solutions are more effective and reliable. AI helps early detection to prevent many stress-related health problems. "Thus, AI can play as an add-on resource for therapeutic work, in addition to those that already exist."

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